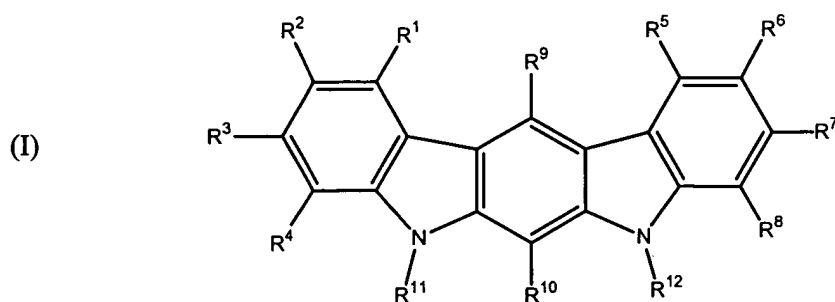


WE CLAIM:

1. A compound having the structure of formula (I)



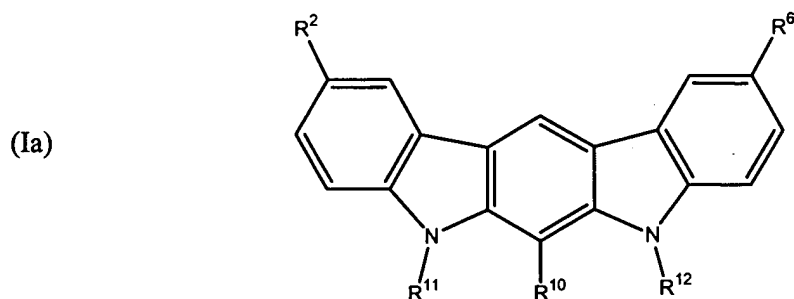
wherein:

R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, and R¹⁰ are substituents independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkenyl, C₂-C₂₄ alkynyl, C₅-C₂₀ aryl, C₆-C₂₄ alkaryl, C₆-C₂₄ aralkyl, halo, hydroxyl, sulfhydryl, C₁-C₂₄ alkoxy, C₂-C₂₄ alkenyloxy, C₂-C₂₄ alkynyloxy, C₅-C₂₀ aryloxy, acyl, acyloxy, C₂-C₂₄ alkoxycarbonyl, C₆-C₂₀ aryloxycarbonyl, halocarbonyl, C₂-C₂₄ alkylcarbonato, C₆-C₂₀ arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C₁-C₂₄ alkyl)-substituted carbamoyl, di-(C₁-C₂₄ alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C₁-C₂₄ alkyl)-substituted amino, mono- and di-(C₅-C₂₀ aryl)-substituted amino, C₂-C₂₄ alkylamido, C₅-C₂₀ arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C₁-C₂₄ alkylsulfanyl, arylsulfanyl, C₁-C₂₄ alkylsulfinyl, C₅-C₂₀ arylsulfinyl, C₁-C₂₄ alkylsulfonyl, C₅-C₂₀ arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms; and

R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkoxycarbonyl, amino-substituted C₁-C₂₄ alkyl, (C₁-C₂₄ alkylamino)-substituted C₁-C₂₄ alkyl, and di-(C₁-C₂₄ alkyl)amino-substituted C₁-C₂₄ alkyl,

with the provisos that: at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^9 , R^{10} , R^{11} , and R^{12} is other than hydrogen; and when R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , and R^8 are selected from hydrogen, halo, alkyl, and alkoxy, then R^{11} and R^{12} are other than hydrogen and alkyl.

2. The compound of claim 1, wherein R^1 , R^3 , R^4 , R^5 , R^7 , R^8 , and R^9 are hydrogen, such that the compound has the structure of formula (Ia)



3. The compound of claim 2, wherein R^2 and R^6 are independently selected from the group consisting of hydrogen, halo, hydroxyl, sulfhydryl, C_1 - C_{12} alkyl, C_2 - C_{12} alkenyl, C_1 - C_{12} alkoxy, C_5 - C_{20} aryloxy, C_2 - C_{12} alkylcarbonyl, C_6 - C_{20} arylcarbonyl, C_2 - C_{12} acyloxy, C_2 - C_{12} alkoxycarbonyl, C_6 - C_{20} aryloxycarbonyl, C_2 - C_{12} alkylcarbonato, carboxy, carbamoyl, mono- (C_1 - C_{12} alkyl)-substituted carbamoyl, di- (C_1 - C_{12} alkyl)-substituted carbamoyl, amino, mono- and di- (C_1 - C_{12} alkyl)-substituted amino, C_2 - C_{12} alkylamido, C_1 - C_{12} alkylsulfanyl, C_1 - C_{12} alkylsulfinyl, and C_1 - C_{12} alkylsulfonyl.

4. The compound of claim 3, wherein R^2 and R^6 are independently selected from the group consisting of halo, C_1 - C_{12} alkyl, C_1 - C_{12} alkoxy, C_2 - C_{12} alkoxycarbonyl, C_2 - C_{12} alkylcarbonato, carbamoyl, mono- (C_1 - C_{12} alkyl)-substituted carbamoyl, di- (C_1 - C_{12} alkyl)-substituted carbamoyl, C_1 - C_{12} alkylsulfanyl, C_1 - C_{12} alkylsulfinyl, and C_1 - C_{12} alkylsulfonyl.

5. The compound of claim 2, wherein R^{10} is C_1 - C_{12} alkyl, C_1 - C_{12} haloalkyl, C_1 - C_{12} alkoxy, C_1 - C_{12} alkylsulfanyl, C_2 - C_{12} alkoxycarbonyl, or C_2 - C_{12} alkylcarbonato.

6. The compound of claim 2, wherein R^{11} and R^{12} are independently selected from the group consisting of hydrogen, C_1 - C_{12} alkyl, C_2 - C_{12} alkoxycarbonyl, amino-substituted C_1 - C_{12}

alkyl, (C₁-C₁₂ alkylamino)-substituted C₁-C₁₂ alkyl, and di-(C₁-C₁₂ alkyl)amino)-substituted C₁-C₁₂ alkyl.

7. The compound of claim 1, wherein at least one of R², R⁶, and R¹⁰ is C₂-C₁₂ alkoxy carbonyl or C₂-C₁₂ alkylcarbonato.

8. The compound of claim 7, wherein at least one of R², R⁶, and R¹⁰ is C₂-C₆ alkoxy carbonyl or C₂-C₆ alkylcarbonato.

9. The compound of claim 2, wherein:

R² and R⁶ are independently selected from hydrogen and C₂-C₆ alkoxy carbonyl;

R¹⁰ is halo, C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₁-C₆ alkoxy, C₁-C₆ alkylsulfanyl, C₂-C₆ alkoxy carbonyl, or C₂-C₆ alkylcarbonato; and

R¹¹ and R¹² are independently selected from hydrogen and C₁-C₆ alkyl.

10. The compound of claim 9, wherein:

R² and R⁶ are independently selected from hydrogen and ethoxy carbonyl;

R¹⁰ is hydrogen, methoxy, ethoxy carbonyl, ethylcarbonato, or perfluorinated C₁-C₆ alkyl;

and

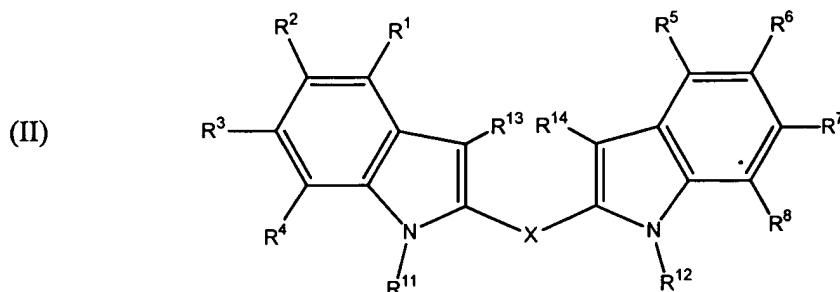
R¹¹ and R¹² are hydrogen.

11. The compound of claim 10, wherein R², R⁶, and R¹⁰ are ethoxy carbonyl.

12. The compound of claim 10, wherein R² and R⁶ are ethoxy carbonyl and R¹⁰ is heptafluoro-(n-propyl).

13. The compound of claim 10, wherein R² and R⁶ are ethoxy carbonyl and R¹⁰ is methoxy.

14. A compound having the structure of formula (II)



wherein:

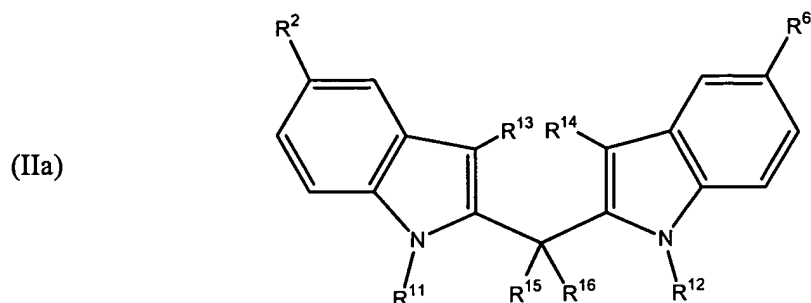
R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸ are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkenyl, C₂-C₂₄ alkynyl, C₅-C₂₀ aryl, C₆-C₂₄ alkaryl, C₆-C₂₄ aralkyl, halo, hydroxyl, sulfhydryl, C₁-C₂₄ alkoxy, C₂-C₂₄ alkenyloxy, C₂-C₂₄ alkynyloxy, C₅-C₂₀ aryloxy, acyl, acyloxy, C₂-C₂₄ alkoxycarbonyl, C₆-C₂₀ aryloxycarbonyl, halocarbonyl, C₂-C₂₄ alkylcarbonato, C₆-C₂₀ arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C₁-C₂₄ alkyl)-substituted carbamoyl, di-(C₁-C₂₄ alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C₁-C₂₄ alkyl)-substituted amino, mono- and di-(C₅-C₂₀ aryl)-substituted amino, C₂-C₂₄ alkylamido, C₅-C₂₀ arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C₁-C₂₄ alkylsulfanyl, arylsulfanyl, C₁-C₂₄ alkylsulfinyl, C₅-C₂₀ arylsulfinyl, C₁-C₂₄ alkylsulfonyl, C₅-C₂₀ arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms, with the proviso that one but not both of R² and R⁶ can be amino, mono-substituted amino, or di-substituted amino;

R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkoxycarbonyl, amino-substituted C₁-C₂₄ alkyl, (C₁-C₂₄ alkylamino)-substituted C₁-C₂₄ alkyl, and di-(C₁-C₂₄ alkyl)amino-substituted C₁-C₂₄ alkyl;

R¹³ and R¹⁴ are defined as for R¹, R², R³, R⁴, R⁵, R⁶, R⁷, and R⁸, with the proviso that at least one of R¹³ and R¹⁴ is other than hydrogen; and

X is O, S, arylene, heteroarylene, CR¹⁵R¹⁶ or NR¹⁷ wherein R¹⁵ and R¹⁶ are hydrogen, C₁-C₆ alkyl, or together form =CR¹⁸R¹⁹ where R¹⁸ and R¹⁹ are hydrogen or C₁-C₆ alkyl, and R¹⁷ is as defined for R¹¹ and R¹².

15. The compound of claim 14, wherein R¹, R³, R⁴, R⁵, R⁷, and R⁸ are hydrogen, and X is CR¹⁵R¹⁶, such that the compound has the structure of formula (IIa)



16. The compound of claim 15, wherein R² and R⁶ are independently selected from the group consisting of hydrogen, halo, hydroxyl, sulfhydryl, C₁-C₁₂ alkyl, C₂-C₁₂ alkenyl, C₁-C₁₂ alkoxy, C₅-C₂₀ aryloxy, C₂-C₁₂ alkylcarbonyl, C₆-C₂₀ arylcarbonyl, C₂-C₁₂ acyloxy, C₂-C₁₂ alkoxycarbonyl, C₆-C₂₀ aryloxycarbonyl, C₂-C₁₂ alkylcarbonato, carboxy, carbamoyl, mono-(C₁-C₁₂ alkyl)-substituted carbamoyl, di-(C₁-C₁₂ alkyl)-substituted carbamoyl, amino, mono- and di-(C₁-C₁₂ alkyl)-substituted amino, C₂-C₁₂ alkylamido, C₁-C₁₂ alkylsulfanyl, C₁-C₁₂ alkylsulfinyl, and C₁-C₁₂ alkylsulfonyl.

17. The compound of claim 16, wherein R² and R⁶ are independently selected from the group consisting of halo, C₁-C₁₂ alkyl, C₁-C₁₂ alkoxy, C₂-C₁₂ alkoxycarbonyl, C₂-C₁₂ alkylcarbonato, carbamoyl, mono-(C₁-C₁₂ alkyl)-substituted carbamoyl, di-(C₁-C₁₂ alkyl)-substituted carbamoyl, C₁-C₁₂ alkylsulfanyl, C₁-C₁₂ alkylsulfinyl, and C₁-C₁₂ alkylsulfonyl.

18. The compound of claim 17, wherein at least one of R² and R⁶ is C₂-C₁₂ alkoxycarbonyl or C₂-C₁₂ alkylcarbonato.

19. The compound of claim 15, wherein R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₁₂ alkyl, C₂-C₁₂ alkoxycarbonyl, amino-substituted C₁-C₁₂

alkyl, (C₁-C₁₂ alkylamino)-substituted C₁-C₁₂ alkyl, and di-(C₁-C₁₂ alkyl)amino-substituted C₁-C₁₂ alkyl.

20. The compound of claim 15, wherein R¹³ and R¹⁴ are independently selected from the group consisting of hydrogen, C₁-C₁₂ alkyl, C₁-C₁₂ alkoxy, and C₂-C₁₂ alkoxy carbonyl.

21. The compound of claim 15, wherein R¹⁵ and R¹⁶ are independently selected from hydrogen and C₁-C₁₂ alkyl, or together form =CR¹⁸R¹⁹ where R¹⁸ and R¹⁹ are hydrogen or C₁-C₆ alkyl.

22. The compound of claim 15, wherein:

R² and R⁶ are independently selected from hydrogen and C₂-C₆ alkoxy carbonyl;

R¹¹ and R¹² are independently selected from hydrogen and C₁-C₆ alkyl;

R¹³ and R¹⁴ are independently selected from hydrogen, C₁-C₆ alkyl, C₁-C₆ alkoxy, and C₂-C₆ alkoxy carbonyl; and

R¹⁵ and R¹⁶ are independently selected from hydrogen and C₁-C₆ alkyl, or together form =CH₂.

23. The compound of claim 22, wherein:

R² and R⁶ are independently selected from hydrogen and ethoxy carbonyl;

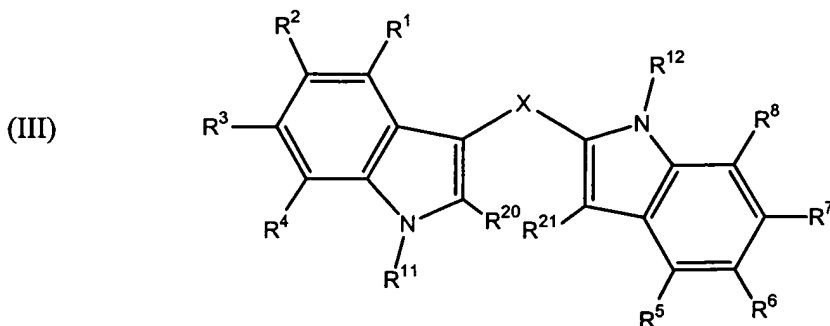
R¹¹ and R¹² are hydrogen;

R¹³ and R¹⁴ are independently selected from hydrogen, methyl, and ethoxy carbonyl; and

R¹⁵ and R¹⁶ are hydrogen.

24. The compound of claim 23, wherein R² and R⁶ are ethoxy carbonyl.

25. A compound having the structure of formula (III)



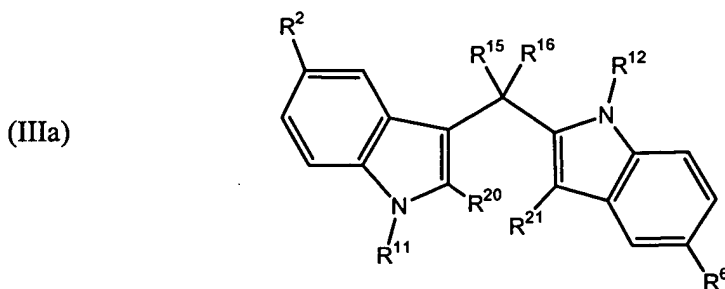
wherein:

R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^{20} , and R^{21} are independently selected from the group consisting of hydrogen, C_1 - C_{24} alkyl, C_2 - C_{24} alkenyl, C_2 - C_{24} alkynyl, C_5 - C_{20} aryl, C_6 - C_{24} alkaryl, C_6 - C_{24} aralkyl, halo, hydroxyl, sulfhydryl, C_1 - C_{24} alkoxy, C_2 - C_{24} alkenyloxy, C_2 - C_{24} alkynyloxy, C_5 - C_{20} aryloxy, acyl, acyloxy, C_2 - C_{24} alkoxycarbonyl, C_6 - C_{20} aryloxycarbonyl, halocarbonyl, C_2 - C_{24} alkylcarbonato, C_6 - C_{20} arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C_1 - C_{24} alkyl)-substituted carbamoyl, di-(C_1 - C_{24} alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C_1 - C_{24} alkyl)-substituted amino, mono- and di-(C_5 - C_{20} aryl)-substituted amino, C_2 - C_{24} alkylamido, C_5 - C_{20} arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C_1 - C_{24} alkylsulfanyl, arylsulfanyl, C_1 - C_{24} alkylsulfinyl, C_5 - C_{20} arylsulfinyl, C_1 - C_{24} alkylsulfonyl, C_5 - C_{20} arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms;

R^{11} and R^{12} are independently selected from the group consisting of hydrogen, C_1 - C_{24} alkyl, C_2 - C_{24} alkoxycarbonyl, amino-substituted C_1 - C_{24} alkyl, (C_1 - C_{24} alkylamino)-substituted C_1 - C_{24} alkyl, and di-(C_1 - C_{24} alkyl)amino-substituted C_1 - C_{24} alkyl; and

X is O, S, arylene, heteroarylene, CR¹⁵R¹⁶ or NR¹⁷ wherein R¹⁵ and R¹⁶ are hydrogen, C₁-C₆ alkyl, or together form =CR¹⁸R¹⁹ where R¹⁸ and R¹⁹ are hydrogen or C₁-C₆ alkyl, and R¹⁷ is as defined for R¹¹ and R¹².

26. The compound of claim 25, wherein R¹, R³, R⁴, R⁵, R⁷, and R⁸ are hydrogen, and X is CR¹⁵R¹⁶, such that the compound has the structure of formula (IIIa)



27. The compound of claim 26, wherein R² and R⁶ are independently selected from the group consisting of hydrogen, halo, hydroxyl, sulfhydryl, C₁-C₁₂ alkyl, C₂-C₁₂ alkenyl, C₁-C₁₂ alkoxy, C₅-C₂₀ aryloxy, C₂-C₁₂ alkylcarbonyl, C₆-C₂₀ arylcarbonyl, C₂-C₁₂ acyloxy, C₂-C₁₂ alkoxycarbonyl, C₆-C₂₀ aryloxycarbonyl, C₂-C₁₂ alkylcarbonato, carboxy, carbamoyl, mono-(C₁-C₁₂ alkyl)-substituted carbamoyl, di-(C₁-C₁₂ alkyl)-substituted carbamoyl, amino, mono- and di-(C₁-C₁₂ alkyl)-substituted amino, C₂-C₁₂ alkylamido, C₁-C₁₂ alkylsulfanyl, C₁-C₁₂ alkylsulfinyl, and C₁-C₁₂ alkylsulfonyl.

28. The compound of claim 27, wherein R² and R⁶ are independently selected from the group consisting of halo, C₁-C₁₂ alkyl, C₁-C₁₂ alkoxy, C₂-C₁₂ alkoxycarbonyl, C₂-C₁₂ alkylcarbonato, carbamoyl, mono-(C₁-C₁₂ alkyl)-substituted carbamoyl, di-(C₁-C₁₂ alkyl)-substituted carbamoyl, C₁-C₁₂ alkylsulfanyl, C₁-C₁₂ alkylsulfinyl, and C₁-C₁₂ alkylsulfonyl.

29. The compound of claim 28, wherein at least one of R² and R⁶ is C₂-C₁₂ alkoxycarbonyl or C₂-C₁₂ alkylcarbonato.

30. The compound of claim 26, wherein R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₁₂ alkyl, C₂-C₁₂ alkoxycarbonyl, amino-substituted C₁-C₁₂

alkyl, (C₁-C₁₂ alkylamino)-substituted C₁-C₁₂ alkyl, and di-(C₁-C₁₂ alkyl)amino-substituted C₁-C₁₂ alkyl.

31. The compound of claim 26, wherein R¹⁵ and R¹⁶ are independently selected from hydrogen and C₁-C₁₂ alkyl, or together form =CR¹⁸R¹⁹ where R¹⁸ and R¹⁹ are hydrogen or C₁-C₆ alkyl.

32. The compound of claim 26, wherein R²⁰ and R²¹ are independently selected from the group consisting of hydrogen, C₁-C₁₂ alkyl, C₁-C₁₂ alkoxy, and C₂-C₁₂ alkoxycarbonyl.

33. The compound of claim 26, wherein:

R² and R⁶ are independently selected from hydrogen and C₂-C₆ alkoxycarbonyl;

R¹¹ and R¹² are independently selected from hydrogen and C₁-C₆ alkyl;

R¹⁵ and R¹⁶ are independently selected from hydrogen, C₁-C₆ alkyl, or together form =CH₂; and

R²⁰ and R²¹ are independently selected from hydrogen, C₁-C₆ alkyl, C₁-C₆ alkoxy, and C₂-C₆ alkoxycarbonyl.

34. The compound of claim 33, wherein:

R² and R⁶ are independently selected from hydrogen and ethoxycarbonyl;

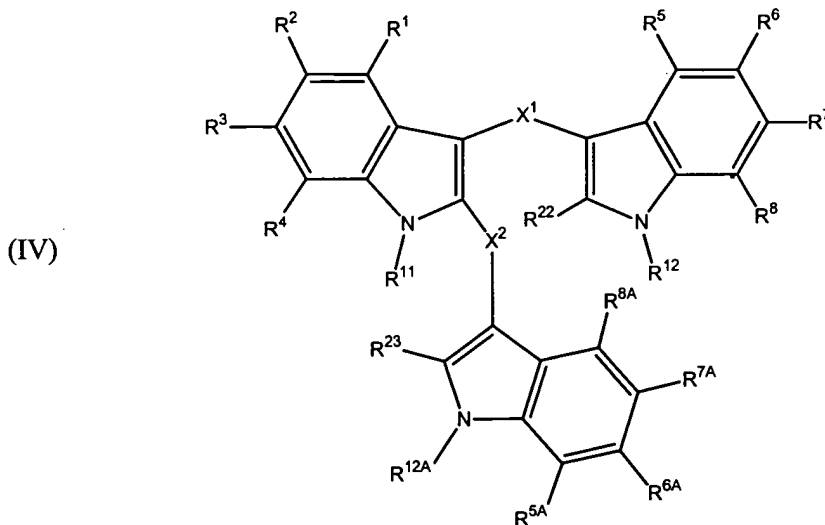
R¹¹ and R¹² are hydrogen;

R¹⁵ and R¹⁶ are hydrogen; and

R²⁰ and R²¹ are independently selected from hydrogen, methyl, and ethoxycarbonyl.

35. The compound of claim 34, wherein R² and R⁶ are ethoxycarbonyl.

36. A compound having the structure of formula (IV)



wherein:

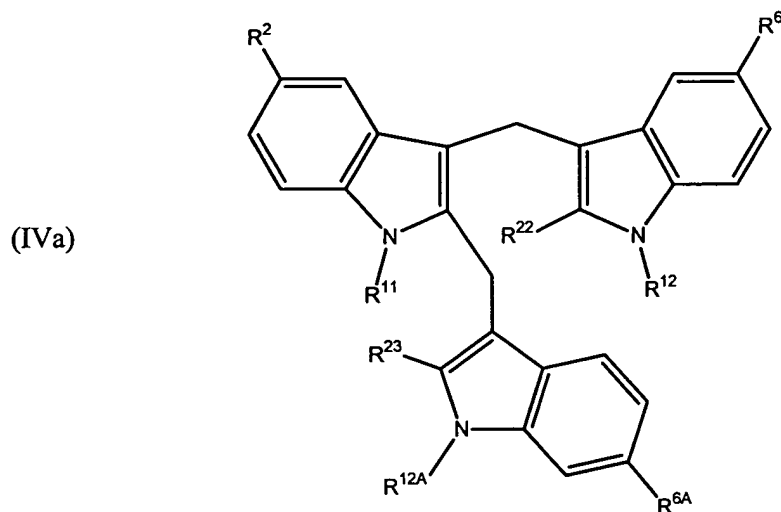
$R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^{5A}, R^{6A}, R^{7A}, R^{8A}, R^{22}$ and R^{23} are independently selected from the group consisting of hydrogen, C_1 - C_{24} alkyl, C_2 - C_{24} alkenyl, C_2 - C_{24} alkynyl, C_5 - C_{20} aryl, C_6 - C_{24} alkaryl, C_6 - C_{24} aralkyl, halo, hydroxyl, sulfhydryl, C_1 - C_{24} alkoxy, C_2 - C_{24} alkenyloxy, C_2 - C_{24} alkynyloxy, C_5 - C_{20} aryloxy, acyl, acyloxy, C_2 - C_{24} alkoxycarbonyl, C_6 - C_{20} aryloxycarbonyl, halocarbonyl, C_2 - C_{24} alkylcarbonato, C_6 - C_{20} arylcarbonato, carboxy, carboxylato, carbamoyl, mono- $(C_1$ - C_{24} alkyl)-substituted carbamoyl, di- $(C_1$ - C_{24} alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di- $(C_1$ - C_{24} alkyl)-substituted amino, mono- and di- $(C_5$ - C_{20} aryl)-substituted amino, C_2 - C_{24} alkylamido, C_5 - C_{20} arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C_1 - C_{24} alkylsulfanyl, arylsulfanyl, C_1 - C_{24} alkylsulfinyl, C_5 - C_{20} arylsulfinyl, C_1 - C_{24} alkylsulfonyl, C_5 - C_{20} arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms;

R^{11} , R^{12} , and R^{12A} are independently selected from the group consisting of hydrogen, C_1 - C_{24} alkyl, C_2 - C_{24} alkoxy carbonyl, amino-substituted C_1 - C_{24} alkyl, (C_1 - C_{24} alkylamino)-substituted C_1 - C_{24} alkyl, and di-(C_1 - C_{24} alkyl)amino-substituted C_1 - C_{24} alkyl; and

X^1 and X^2 are independent selected from O, S, arylene, heteroarylene, $CR^{15}R^{16}$ and NR^{17} wherein R^{15} and R^{16} are hydrogen, C_1 - C_6 alkyl, or together form $=CR^{18}R^{19}$ where R^{18} and R^{19} are hydrogen or C_1 - C_6 alkyl, and R^{17} is as defined for R^{11} and R^{12} ,

with the proviso that at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^{5A} , R^{6A} , R^{7A} , R^{8A} , R^{11} , R^{22} and R^{23} is other than hydrogen.

37. The compound of claim 36, wherein R^1 , R^3 , R^4 , R^5 , R^7 , R^8 , R^{5A} , R^{7A} , and R^{8A} are hydrogen, and X^1 and X^2 are CH_2 , such that the compound has the structure of formula (IVa)



with the proviso that at least one of R^2 , R^6 , R^{6A} , R^{11} , R^{12} , R^{12A} , R^{22} and R^{23} is other than hydrogen.

38. The compound of claim 37, wherein R^2 , R^6 , R^{6A} , R^{22} , and R^{23} are independently selected from the group consisting of halo, C_1 - C_{12} alkyl, C_1 - C_{12} alkoxy, C_2 - C_{12} alkoxy carbonyl, C_2 - C_{12} alkylcarbonato, carbamoyl, mono-(C_1 - C_{12} alkyl)-substituted carbamoyl, di-(C_1 - C_{12} alkyl)-substituted carbamoyl, C_1 - C_{12} alkylsulfanyl, C_1 - C_{12} alkylsulfinyl, and C_1 - C_{12} alkylsulfonyl.

39. The compound of claim 38, wherein at least one of R^2 , R^6 , R^{6A} , R^{22} , and R^{23} is C_2 - C_{12} alkoxy carbonyl or C_2 - C_{12} alkylcarbonato.

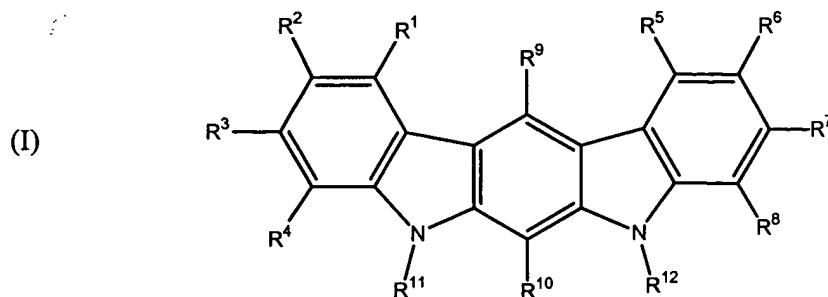
40. The compound of claim 37, wherein R^{11} , R^{12} , and R^{12A} are independently selected from the group consisting of hydrogen, C_1 - C_{12} alkyl, C_2 - C_{12} alkoxy carbonyl, amino-substituted C_1 - C_{12} alkyl, $(C_1$ - C_{12} alkylamino)-substituted C_1 - C_{12} alkyl, and di- $(C_1$ - C_{12} alkyl)amino-substituted C_1 - C_{12} alkyl.

41. The compound of claim 37, wherein:
 R^2 , R^6 , R^{6A} , R^{22} , and R^{23} are independently selected from hydrogen and C_2 - C_6 alkoxy carbonyl; and
 R^{11} , R^{12} , and R^{12A} are independently selected from hydrogen and C_1 - C_6 alkyl.

42. The compound of claim 41, wherein:
 R^2 , R^6 , R^{6A} , R^{22} , and R^{23} are independently selected from hydrogen and ethoxy carbonyl;
 R^{11} , R^{12} , and R^{12A} are hydrogen;

43. The compound of claim 42, wherein at least one of R^2 , R^6 , R^{6A} , R^{22} , and R^{23} is ethoxy carbonyl.

44. A pharmaceutical composition comprising a therapeutically effective amount of a compound having the structure of formula (I)



wherein:

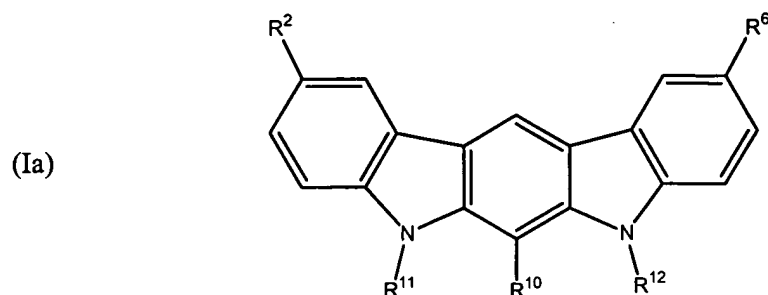
R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^9 , and R^{10} are substituents independently selected from the group consisting of hydrogen, C_1 - C_{24} alkyl, C_2 - C_{24} alkenyl, C_2 - C_{24} alkynyl, C_5 - C_{20} aryl, C_6 - C_{24} alkaryl, C_6 - C_{24} aralkyl, halo, hydroxyl, sulfhydryl, C_1 - C_{24} alkoxy, C_2 - C_{24} alkenyloxy, C_2 - C_{24} alkynyloxy, C_5 - C_{20} aryloxy, acyl, acyloxy, C_2 - C_{24} alkoxy carbonyl, C_6 - C_{20} aryloxy carbonyl,

halocarbonyl, C₂-C₂₄ alkylcarbonato, C₆-C₂₀ arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C₁-C₂₄ alkyl)-substituted carbamoyl, di-(C₁-C₂₄ alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C₁-C₂₄ alkyl)-substituted amino, mono- and di-(C₅-C₂₀ aryl)-substituted amino, C₂-C₂₄ alkylamido, C₅-C₂₀ arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C₁-C₂₄ alkylsulfanyl, arylsulfanyl, C₁-C₂₄ alkylsulfinyl, C₅-C₂₀ arylsulfinyl, C₁-C₂₄ alkylsulfonyl, C₅-C₂₀ arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms; and

R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkoxy carbonyl, amino-substituted C₁-C₂₄ alkyl, (C₁-C₂₄ alkylamino)-substituted C₁-C₂₄ alkyl, and di-(C₁-C₂₄ alkyl)amino-substituted C₁-C₂₄ alkyl,

with the proviso that at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, R¹⁰, R¹¹, and R¹² is other than hydrogen.

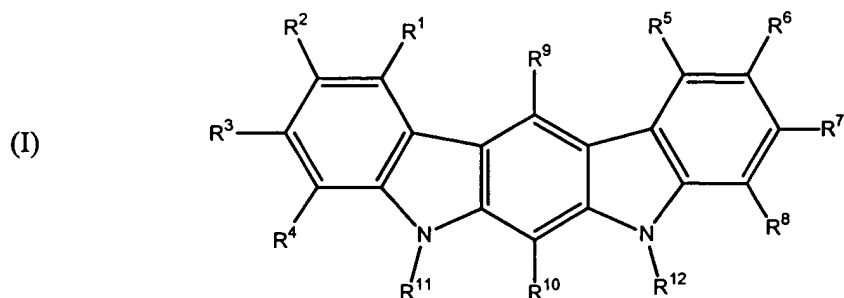
45. The composition of claim 44, wherein R¹, R³, R⁴, R⁵, R⁷, R⁸, and R⁹ are hydrogen, such that the compound has the structure of formula (Ia)



46. The composition of claim 44, wherein the pharmaceutically acceptable carrier is suitable for oral administration and the composition comprises an oral dosage form.

47. The composition of claim 46, wherein the oral dosage form is a tablet.
48. The composition of claim 46, wherein the oral dosage form is a capsule.
49. The composition of claim 44, wherein the pharmaceutically acceptable carrier is suitable for parenteral administration and the composition comprises a parenterally administrable formulation.
50. The composition of claim 45, wherein the pharmaceutically acceptable carrier is suitable for oral administration and the composition comprises an oral dosage form.
51. The composition of claim 50, wherein the oral dosage form is a tablet.
52. The composition of claim 50, wherein the oral dosage form is a capsule.
53. The composition of claim 45, wherein the pharmaceutically acceptable carrier is suitable for parenteral administration and the composition comprises a parenterally administrable formulation.
54. A pharmaceutical composition comprising the compound of any one of claims 14, 15, 25, 26, 36, and 37 in combination with a pharmaceutically acceptable carrier.
55. The composition of claim 54, wherein the pharmaceutically acceptable carrier is suitable for oral administration and the composition comprises an oral dosage form.
56. The composition of claim 55, wherein the oral dosage form is a tablet.
57. The composition of claim 55, wherein the oral dosage form is a capsule.
58. The composition of claim 54, wherein the pharmaceutically acceptable carrier is suitable for parenteral administration and the composition comprises a parenterally administrable formulation.

59. A method for preventing or treating cancer in a mammalian individual, comprising administering to the individual a therapeutically effective amount of a compound having the structure of formula (I)



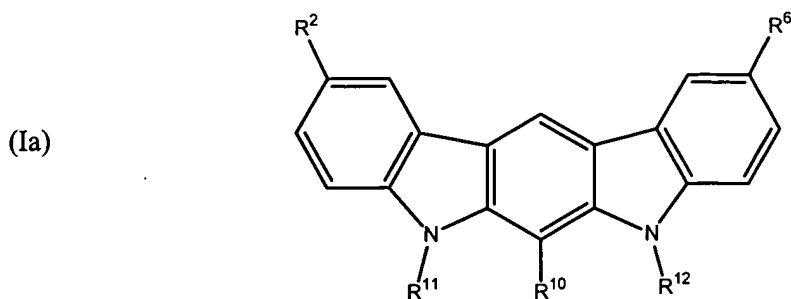
wherein:

R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, and R¹⁰ are substituents independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkenyl, C₂-C₂₄ alkynyl, C₅-C₂₀ aryl, C₆-C₂₄ alkaryl, C₆-C₂₄ aralkyl, halo, hydroxyl, sulfhydryl, C₁-C₂₄ alkoxy, C₂-C₂₄ alkenyloxy, C₂-C₂₄ alkynyloxy, C₅-C₂₀ aryloxy, acyl, acyloxy, C₂-C₂₄ alkoxycarbonyl, C₆-C₂₀ aryloxycarbonyl, halocarbonyl, C₂-C₂₄ alkylcarbonato, C₆-C₂₀ arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C₁-C₂₄ alkyl)-substituted carbamoyl, di-(C₁-C₂₄ alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C₁-C₂₄ alkyl)-substituted amino, mono- and di-(C₅-C₂₀ aryl)-substituted amino, C₂-C₂₄ alkylamido, C₅-C₂₀ arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C₁-C₂₄ alkylsulfanyl, arylsulfanyl, C₁-C₂₄ alkylsulfinyl, C₅-C₂₀ arylsulfinyl, C₁-C₂₄ alkylsulfonyl, C₅-C₂₀ arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms; and

R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkoxycarbonyl, amino-substituted C₁-C₂₄ alkyl, (C₁-C₂₄ alkylamino)-substituted C₁-C₂₄ alkyl, and di-(C₁-C₂₄ alkyl)amino-substituted C₁-C₂₄ alkyl,

with the proviso that at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^9 , R^{10} , R^{11} , and R^{12} is other than hydrogen.

60. The method of claim 59, wherein R^1 , R^3 , R^4 , R^5 , R^7 , R^8 , and R^9 are hydrogen, such that the compound has the structure of formula (Ia)



61. The method of claim 59, wherein the cancer is an estrogen-dependent cancer.

62. The method of claim 61, wherein the cancer is of the breast, cervix, uterus, ovaries, or endometrium.

63. The method of claim 62, wherein the cancer is breast cancer.

64. The method of claim 62, wherein the cancer is ovarian cancer.

65. The method of claim 61, wherein the cancer is metastasized.

66. The method of claim 61, wherein the cancer is a drug-resistant cancer.

67. The method of claim 66, wherein the cancer exhibits multiple drug resistance.

68. The method of claim 59, wherein the cancer is a non-estrogen-dependent cancer.

69. The method of claim 68, wherein the cancer is of the prostate, liver, lung, colon or pancreas.

70. The method of claim 68, wherein the cancer is metastasized.
71. The method of claim 68, wherein the cancer is a drug-resistant cancer.
72. The method of claim 71, wherein the cancer exhibits multiple drug resistance.
73. The method of claim 60, wherein the cancer is an estrogen-dependent cancer.
74. The method of claim 73, wherein the cancer is of the breast, cervix, uterus, ovaries, or endometrium.
75. The method of claim 74, wherein the cancer is breast cancer.
76. The method of claim 74, wherein the cancer is ovarian cancer.
77. The method of claim 73, wherein the cancer is metastasized.
78. The method of claim 73, wherein the cancer is a drug-resistant cancer.
79. The method of claim 78, wherein the cancer exhibits multiple drug resistance.
80. The method of claim 60, wherein the cancer is a non-estrogen-dependent cancer.
81. The method of claim 80, wherein the cancer is of the prostate, liver, lung, colon or pancreas.
82. The method of claim 80, wherein the cancer is metastasized.
83. The method of claim 80, wherein the cancer is a drug-resistant cancer.
84. The method of claim 83, wherein the cancer exhibits multiple drug resistance.

85. A method for preventing or treating cancer in a mammalian individual, comprising administering to the individual a therapeutically effective amount of the compound of any one of claims 14, 15, 25, 26, 36, and 37.

86. The method of claim 85, wherein the cancer is an estrogen-dependent cancer.

87. The method of claim 86, wherein the cancer is of the breast, cervix, uterus, ovaries, or endometrium.

88. The method of claim 87, wherein the cancer is breast cancer.

89. The method of claim 87, wherein the cancer is ovarian cancer.

90. The method of claim 86, wherein the cancer is metastasized.

91. The method of claim 86, wherein the cancer is a drug-resistant cancer.

92. The method of claim 91, wherein the cancer exhibits multiple drug resistance.

93. The method of claim 85, wherein the cancer is a non-estrogen-dependent cancer.

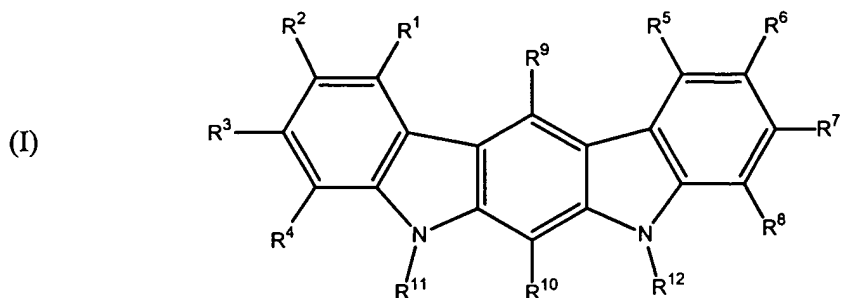
94. The method of claim 93, wherein the cancer is of the prostate, liver, lung, colon or pancreas.

95. The method of claim 93, wherein the cancer is metastasized.

96. The method of claim 93, wherein the cancer is a drug-resistant cancer.

97. The method of claim 96, wherein the cancer exhibits multiple drug resistance.

98. A method for treating an individual predisposed to or suffering from an estrogen-related condition, disease or disorder other than an estrogen-dependent cancer, comprising administering to the individual a therapeutically effective amount of a compound having the structure of formula (I)



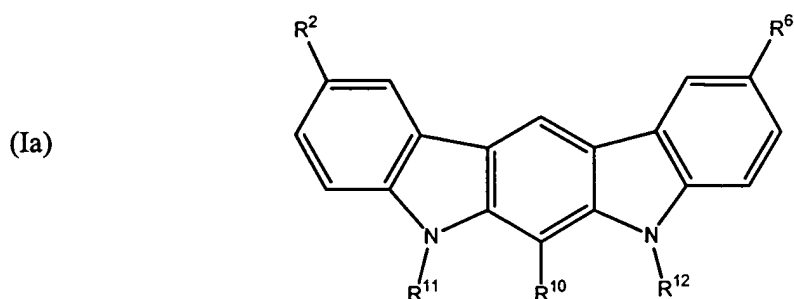
wherein:

R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, and R¹⁰ are substituents independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkenyl, C₂-C₂₄ alkynyl, C₅-C₂₀ aryl, C₆-C₂₄ alkaryl, C₆-C₂₄ aralkyl, halo, hydroxyl, sulfhydryl, C₁-C₂₄ alkoxy, C₂-C₂₄ alkenyloxy, C₂-C₂₄ alkynyloxy, C₅-C₂₀ aryloxy, acyl, acyloxy, C₂-C₂₄ alkoxycarbonyl, C₆-C₂₀ aryloxycarbonyl, halocarbonyl, C₂-C₂₄ alkylcarbonato, C₆-C₂₀ arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C₁-C₂₄ alkyl)-substituted carbamoyl, di-(C₁-C₂₄ alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C₁-C₂₄ alkyl)-substituted amino, mono- and di-(C₅-C₂₀ aryl)-substituted amino, C₂-C₂₄ alkylamido, C₅-C₂₀ arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C₁-C₂₄ alkylsulfanyl, arylsulfanyl, C₁-C₂₄ alkylsulfinyl, C₅-C₂₀ arylsulfinyl, C₁-C₂₄ alkylsulfonyl, C₅-C₂₀ arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms; and

R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkoxycarbonyl, amino-substituted C₁-C₂₄ alkyl, (C₁-C₂₄ alkylamino)-substituted C₁-C₂₄ alkyl, and di-(C₁-C₂₄ alkyl)amino-substituted C₁-C₂₄ alkyl,

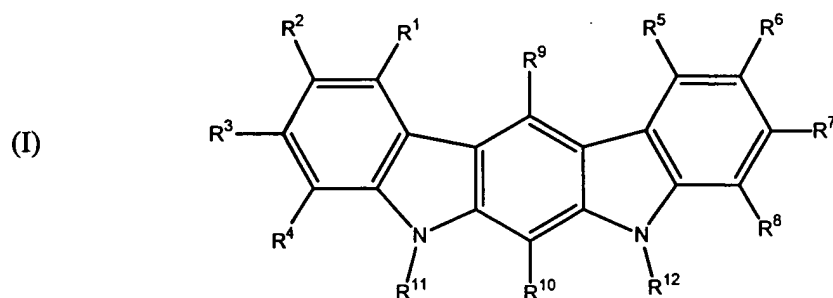
with the proviso that at least one of R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^9 , R^{10} , R^{11} , and R^{12} is other than hydrogen.

99. The method of claim 98, wherein R^1 , R^3 , R^4 , R^5 , R^7 , R^8 , and R^9 are hydrogen, such that the compound has the structure of formula (Ia)



100. A method for treating an individual predisposed to or suffering from an estrogen-related condition, disease or disorder other than an estrogen-dependent cancer, comprising administering to the individual a therapeutically effective amount of the compound of any one of claims 14, 15, 25, 26, 36, and 37.

101. A method for treating an individual predisposed to or suffering from a viral infection, comprising administering to the individual a therapeutically effective amount of a compound having the structure of formula (I)



wherein:

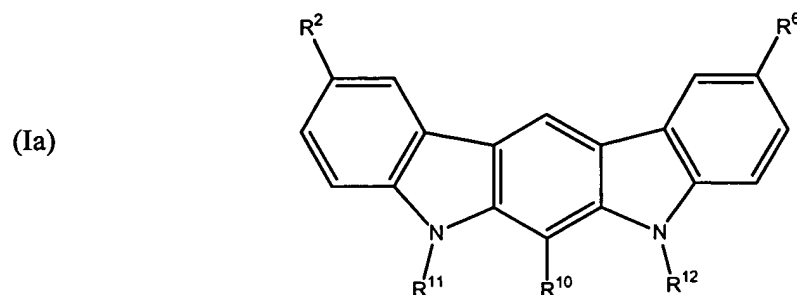
R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , R^9 , and R^{10} are substituents independently selected from the group consisting of hydrogen, C_1 - C_{24} alkyl, C_2 - C_{24} alkenyl, C_2 - C_{24} alkynyl, C_5 - C_{20} aryl, C_6 - C_{24} alkaryl, C_6 - C_{24} aralkyl, halo, hydroxyl, sulfhydryl, C_1 - C_{24} alkoxy, C_2 - C_{24} alkenyloxy, C_2 - C_{24}

alkynyloxy, C₅-C₂₀ aryloxy, acyl, acyloxy, C₂-C₂₄ alkoxy carbonyl, C₆-C₂₀ aryloxy carbonyl, halocarbonyl, C₂-C₂₄ alkylcarbonato, C₆-C₂₀ arylcarbonato, carboxy, carboxylato, carbamoyl, mono-(C₁-C₂₄ alkyl)-substituted carbamoyl, di-(C₁-C₂₄ alkyl)-substituted carbamoyl, mono-substituted arylcarbamoyl, thiocarbamoyl, carbamido, cyano, isocyano, cyanato, isocyanato, isothiocyanato, azido, formyl, thioformyl, amino, mono- and di-(C₁-C₂₄ alkyl)-substituted amino, mono- and di-(C₅-C₂₀ aryl)-substituted amino, C₂-C₂₄ alkylamido, C₅-C₂₀ arylamido, imino, alkylimino, arylimino, nitro, nitroso, sulfo, sulfonato, C₁-C₂₄ alkylsulfanyl, arylsulfanyl, C₁-C₂₄ alkylsulfinyl, C₅-C₂₀ arylsulfinyl, C₁-C₂₄ alkylsulfonyl, C₅-C₂₀ arylsulfonyl, phosphono, phosphonato, phosphinato, phospho, phosphino, and combinations thereof, and further wherein any two adjacent (*ortho*) substituents may be linked to form a cyclic structure selected from five-membered rings, six-membered rings, and fused five-membered and/or six-membered rings, wherein the cyclic structure is aromatic, alicyclic, heteroaromatic, or heteroalicyclic, and has zero to 4 non-hydrogen substituents and zero to 3 heteroatoms; and

R¹¹ and R¹² are independently selected from the group consisting of hydrogen, C₁-C₂₄ alkyl, C₂-C₂₄ alkoxy carbonyl, amino-substituted C₁-C₂₄ alkyl, (C₁-C₂₄ alkylamino)-substituted C₁-C₂₄ alkyl, and di-(C₁-C₂₄ alkyl)amino-substituted C₁-C₂₄ alkyl,

with the proviso that at least one of R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, R⁹, R¹⁰, R¹¹, and R¹² is other than hydrogen.

102. The method of claim 101, wherein R¹, R³, R⁴, R⁵, R⁷, R⁸, and R⁹ are hydrogen, such that the compound has the structure of formula (Ia)



103. A method for treating an individual predisposed to or suffering from a viral infection, comprising administering to the individual a therapeutically effective amount of the compound of any one of claims 14, 15, 25, 26, 36, and 37.

104. The method of claim 101, wherein the viral infection is caused by a DNA virus.

105. The method of claim 104, wherein the DNA virus is human papillomavirus.

106. The method of claim 101, wherein the viral infection is a retroviral infection.

107. The method of claim 102, wherein the viral infection is caused by a DNA virus.

108. The method of claim 107, wherein the DNA virus is human papillomavirus.

109. The method of claim 102, wherein the viral infection is a retroviral infection.

110. The method of claim 103, wherein the viral infection is caused by a DNA virus.

111. The method of claim 110, wherein the DNA virus is human papillomavirus.

112. The method of claim 110, wherein the viral infection is a retroviral infection.

113. A method for synthesizing a 6-substituted 5,7-dihydro-indolo[2,3-b]carbazole compound, comprising treating an N-protected 3,3'-diindolylmethane with an organolithium reagent in the presence of a reactant selected from the group consisting of an anhydride, an acyl chloride, an alkyl carbonate, an aryl carbonate, an alkyl chloroformate, and an aryl chloroformate.

114. The method of claim 113, wherein the organolithium reagent is lithium 2,2,6,6-tetramethylpiperidide or lithium diisopropylamide.

115. The method of claim 113, wherein the anhydride has the structure R-(CO)-O-(CO)-R, wherein R is alkyl or substituted alkyl.

116. The method of claim 115, wherein R is alkyl.
117. The method of claim 116, wherein R is methyl.
118. The method of claim 115, wherein R is substituted alkyl.
119. The method of claim 118, wherein R is fluorinated alkyl.
120. The method of claim 119, wherein R is perfluorinated lower alkyl.
121. The method of claim 113, wherein the reactant is an alkyl chloroformate, such that the 6-substituted 5,7-dihydro-indolo[2,3-b]carbazole is a 6-alkylcarbonato-5,7-dihydro-indolo[2,3-b]carbazole.
122. The method of claim 113, wherein the reactant is an alkyl chloroformate and the reaction is carried out in the presence of acid, such that the 6-substituted 5,7-dihydro-indolo[2,3-b]carbazole is a 6-hydroxy-5,7-dihydro-indolo[2,3-b]carbazole.
123. The method of claim 122, further comprising contacting the 6-hydroxy-5,7-dihydro-indolo[2,3-b]carbazole with an alkylating reagent to provide a 6-alkoxy-5,7-dihydro-indolo[2,3-b]carbazole.